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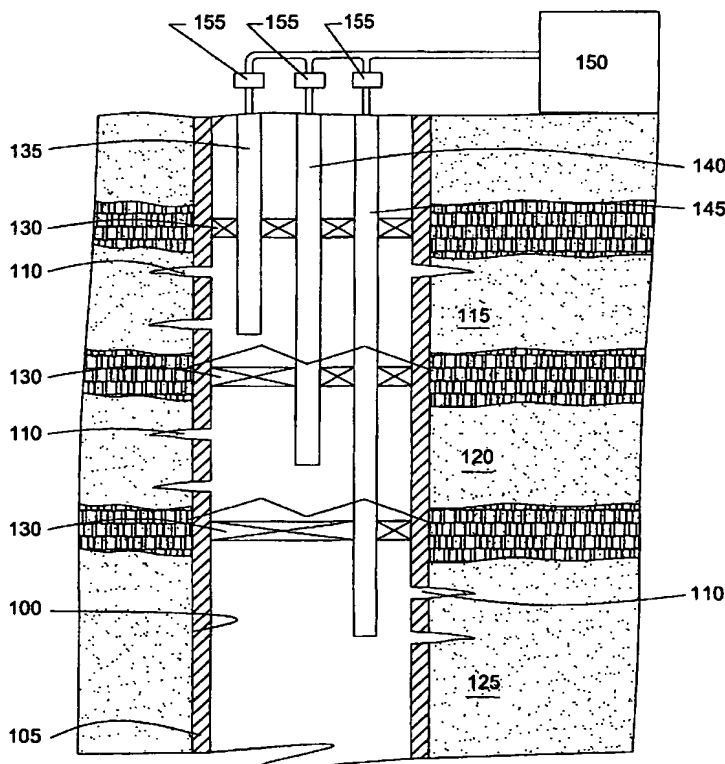
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(54) Title: METHOD AND APPARATUS FOR INJECTING STEAM INTO A GEOLOGICAL FORMATION



(57) Abstract: The present invention generally provides a method and apparatus for injecting a compressible fluid at a controlled flow rate into a geological formation at multiple zones of interest. In one aspect, the invention provides a tubing string with a pocket and a nozzle at each isolated zone. The nozzle permits a predetermined, controlled flow rate to be maintained at higher annulus to tubing pressure ratios. The nozzle includes a diffuser portion to recover lost steam pressure associated with critical flow as the steam exits the nozzle and enters a formation via perforations in wellbore casing. In another aspect, the present invention assures that the fluid is supplied uniformly to a long horizontal wellbore by providing controlled injection at multiple locations that are distributed throughout the length of the wellbore. In another aspect, the invention ensures that saturated steam is injected into a formation in a predetermined proportion of water and vapor by providing a plurality of apertures between a tubing wall and a pocket. The apertures provide distribution of steam that maintains a relative mixture of water and vapor. In another aspect of the invention, a single source of steam is provided to multiple, separate wellbores using the nozzle of the invention to provide a controlled flow of steam to each wellbore.

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